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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,450	05/28/2002	Ravi Chandran	I2447US02	4359
7590	06/08/2006			EXAMINER WOZNIAK, JAMES S
McAndrews Held & Malloy 34th Floor 500 W Madison Street Chicago, IL 60661			ART UNIT 2626	PAPER NUMBER

DATE MAILED: 06/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/019,450	CHANDRAN ET AL.	
	Examiner	Art Unit	
	James S. Wozniak	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 28 May 2002.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-60 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 5/28/2002 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

DETAILED ACTION

Claim Objections

1. **Claims 9, 14, and 44** are objected to because of the following informalities:

With respect to Claim 9, Line 3, “one of said subframes” should be changed to – one subframe-- in order to provide proper antecedent basis.

With respect to Claims 14 and 44, Line 2, “outside feedback loop” should be changed to –outside a feedback loop--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 1-30 and 55-60** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1 and 25 recite “a processor responsive to...” but lack means for performing the operations that the processor performs.

A single means claim, i.e., where a means recitation does not appear in combination with another recited element of means, is subject to an undue breadth rejection under 35 U.S.C. 112, first paragraph. *In re Hyatt*, 708 F.2d 712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983) (A single means claim which covered every conceivable means for achieving the stated purpose was held nonenabling for the scope of the claim because the specification disclosed at most only those means known to the inventor.). When claims depend on a recited property, a fact situation comparable to Hyatt is possible, where the claim covers every conceivable structure (means) for achieving the stated property (result) while the specification discloses at most only those known to the inventor.

Claim 55 recites a single step method for a single means claim, and thus, is also rejected under 35 U.S.C. 112, first paragraph for the above noted reasons.

Dependent claims 2-24, 26-30, and 56-60 do not remedy the lack of enablement issue noted above with respect to claims 25 and 55, and therefore, are also rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Art Unit: 2626

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. **Claims 55-60** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As per the MPEP (2106 [R-3], IV):

In practical terms, claims define nonstatutory processes if they:

- consist solely of mathematical operations without some claimed practical application (i.e., executing a “mathematical algorithm”); or
- simply manipulate abstract ideas, e.g., a bid (*Schrader*, 22 F.3d at 293-94, 30 USPQ2d at 1458-59) or a bubble hierarchy (*Warmerdam*, 33 F.3d at 1360, 31 USPQ2d at 1759), without some claimed practical application.

In the particular case of Claim 55, the claimed subject matter is directed towards a method comprising “adjusting first bits and second bits,” which is merely a manipulation of abstract data in a processing device that does not, in itself, produce a useful, concrete, and tangible result.

Dependent claims 56-60 do not remedy the non-statutory subject matter issue noted above with respect to claim 55, and therefore, are also rejected under 35 U.S.C. 101, as being directed towards non-statutory subject matter.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. **Claims 1-2, 5-6, 11, 15, 24, 31-32, 35-36, 38, 41, 45, and 54** are rejected under 35 U.S.C. 102(e) as being anticipated by Jarvinen et al (*U.S. Patent: 5,946,651*).

With respect to **Claims 1 and 31**, Jarvinen discloses:

In a communications system for transmitting digital signals using a compression code comprising a predetermined plurality of parameters including a first parameter, said parameters representing an audio signal comprising a plurality of audio characteristics including a first characteristic, said first parameter being related to said first characteristic (*receiving transmitted coded speech parameters at a decoder including LPC coefficients and a gain parameter, Col. 6, Lines 16-58*) said compression code being decodable by a plurality of decoding steps including a first decoding step for decoding said parameters related to said first characteristic, an apparatus for adjusting the first characteristic comprising:

A processor responsive to said digital signals to read at least said first parameter and to generate at least a first parameter value derived from said first parameter (*decoding excitation parameters having associated gain factors, Col. 6, Lines 16-58*);

Responsive to said digital signals and said first parameter value to generate an adjusted first parameter value representing an adjustment of said first characteristic (*adjusting a gain factor with a scaling factor, Col. 7, Line 58- Col. 8, Line 61*); and

Responsive to said adjusted first parameter value to derive an adjusted first parameter and to replace said first parameter with said adjusted first parameter

(replacing an excitation parameter and associated gain with a perceptually adjusted excitation parameter, Col. 7, Line 34- Col. 8, Line 61).

With respect to **Claims 2 and 32**, Jarvinen discloses:

The first characteristic comprises a level of the audio signal (*gain factor that is indicative of a desired speech signal level, Col. 5, Line 25- Col. 6, Line 32; and Col. 12, Lines 24-33*).

With respect to **Claims 5 and 35**, Jarvinen discloses:

The compression code comprises a linear predictive code (*LP coefficients, Col. 5, Lines 25-57*).

With respect to **Claims 6 and 36**, Jarvinen discloses:

The compression code comprises regular pulse excitation long term prediction code (*LTP prediction coefficients, Col. 5, Lines 25-57*).

With respect to **Claims 11 and 41**, Jarvinen discloses:

The processor test the adjusted first parameter value for an overflow and underflow condition before deriving the adjusted first parameter (*multiple threshold comparisons, Col. 7, Line 58- Col. 8, Line 61*).

With respect to **Claims 15 and 45**, Jarvinen discloses performing the decoding processing, as applied to Claim 1, on a plurality of parameters from a series of time frames (*Col. 6, Lines 16-58; and Col. 12, Lines 52-54*).

With respect to **Claims 24 and 54**, Jarvinen further discloses:

The processor performs at least the first decoding step to generate decoded signals related to the first characteristic of the audio signal (*recovering speech parameters using a speech decoder, Col. 6, Lines 16-26*).

With respect to **Claim 38**, Jarvinen discloses the use of the CELP coding standard (*Col. 5, Lines 25-35*).

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. **Claims 25-27 and 55-57** are rejected under 35 U.S.C. 102(b) as being anticipated by Yajima et al (*U.S. Patent: 5,873,058*).

With respect to **Claims 25 and 55**, Yajima discloses:

In a communications system for transmitting digital signals comprising code samples, said code samples comprising first bits using a compression code and second bits using a linear code, said code samples representing an audio signal, said audio signal having a plurality of audio characteristics including a first characteristic (*CELP coded speech and associated gain data comprising bits, Col. 1, Line 33- Col. 2, Line 7*), as apparatus for adjusting the first characteristic without decoding said compression code comprising (*partial decoding of speech parameters, Col. 33, Lines 42-65*):

A processor responsive to said second bits to adjust said first bits and said second bits, whereby said first characteristic is adjusted (*adjusting a gain speech parameter, Col. 9, Line 35- Col. 10, Line 25; Col. 27, Line 40- Col. 29, Line 10; Col. 31, Lines 12-53*).

With respect to **Claims 26 and 56**, Yajima recites:

The linear code comprises PCM code (*ADPCM, Col. 20, Lines 50-53*).

With respect to **Claims 27 and 57**, Yajima discloses:

The first characteristic comprises audio level (*gain parameter which is indicative of an audio level, Col. 9, Line 35- Col. 10, Line 25; Col. 27, Line 40- Col. 29, Line 10; Col. 31, Lines 12-53*).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claims 3-4, 10, 33-34, and 40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Jarvinen et al in view of Yajima et al.

With respect to **Claims 3 and 33**, Jarvinen discloses the speech decoding apparatus utilizing perceptual gain scaling, as applied to Claims 1 and 31. Jarvinen does not teach avoiding a decoding step avoiding substantial altering of the first

characteristic, however Yajima teaches avoiding synthesizing filter processing for a normal voice signal that would not require gain adjustment (*Col. 22, Lines 1-24; and adjusting a gain speech parameter, Col. 9, Line 35- Col. 10, Line 25; Col. 27, Line 40-Col. 29, Line 10; Col. 31, Lines 12-53*).

Jarvinen and Yasunaga are analogous art because they are from a similar field of endeavor in speech decoding utilizing adaptive gain control. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Jarvinen with the means for avoiding synthesizing filter processing as taught by Yasunaga in order to implement a more efficient, high quality voice transmission network (*Yajima, Col. 7, Lines 25-32*).

With respect to **Claims 4 and 34**, Yajima teaches synthesizing filter processing, as applied to Claims 3 and 33.

With respect to **Claims 10 and 40**, Yajima further discloses gain adjustment implantation at a relay node situated on a network that would inherently be capable of receiving near and far end speech from various transmission nodes connected to the network (*Fig. 16, Element 404; Col. 9, Line 35- Col. 10, Line 25; Col. 27, Line 40- Col. 29, Line 10; Col. 31, Lines 12-53*).

12. **Claims 8-9, 12, 16, 18, 20-23, 39, 42, 46, 48, and 50-53** are rejected under 35 U.S.C. 103(a) as being unpatentable over Jarvinen et al in view of Yasunaga et al (U.S. Patent: 6,330,534).

With respect to **Claim 8**, Jarvinen discloses the speech decoding apparatus utilizing perceptual gain scaling, as applied to Claim 1. Jarvinen does not explicitly teach the use of the algebraic CELP coding standard, however Yasunaga teaches the use of said standard (*Col. 3, Lines 42-51*).

Jarvinen and Yasunaga are analogous art because they are from a similar field of endeavor in speech decoding utilizing adaptive gain control. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Jarvinen with the ACELP standard taught by Yasunaga in order to provide a standard that reduces the complexities of computing coding distortions (*Yasunaga, Col. 3, Lines 42-51*).

With respect to **Claim 9**, Jarvinen further teaches the gain scaling factor as applied to claim 1.

With respect to **Claims 12 and 42**, Jarvinen discloses the speech decoding apparatus utilizing perceptual gain scaling, as applied to Claims 11 and 41. Jarvinen does not teach that a decoder derives an adjusted speech parameter by quantizing an adjusted speech parameter, however Yasunaga discloses a process for adjusting a gain factor applied to a speech parameter by quantizing an adjusted target speech parameter (*Col. 30, Line 42- Col. 31, Line 9*).

Jarvinen and Yasunaga are analogous art because they are from a similar field of endeavor in speech decoding utilizing adaptive gain control. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Jarvinen with the gain adjusting process taught by Yasunaga in order

to provide a means for minimizing a quantization error between target and decoded speech parameters (*Yasunaga, Col. 30, Line 42 - Col. 31, Line 9*).

Claims 16 and 46 contain subject matter similar to Claims 12, 15, 42, and 45 and thus, are rejected for the same reasons.

Claims 18 and 48 contains subject matter similar to Claim 12, and thus, is rejected for the same reasons.

With respect to **Claims 20 and 50**, Yasunaga further discloses scalar quantization performed using a predetermined quantization table (*Col. 12, Lines 10-21*).

With respect to **Claims 21 and 51**, Yasunaga further discloses subframe-based speech processing (*Col. 1, Line 33- Col. 2, Line 9*).

With respect to **Claims 22 and 52**, Yasunaga further discloses:

The processor replaces the first parameter with the adjusted first parameter for a first subframe before processing a subframe following the first subframe (*adjusting gains of processing frames within a speech frame on a frame-by-frame basis, Col. 28, Lines 40-50; and Col. 30, Line 42- Col. 31, Line 9*).

With respect to **Claims 23 and 53**, Yasunaga further discloses adjusting a gain of a current processing frame based on a gain of a previous processing frame (*Col. 30, Line 42- Col. 31, Line 9*), and subframe-based speech processing, as applied to Claims 21 and 51.

Claim 39 contains subject matter similar to Claims 9 and 21, and thus, is rejected for the same reasons.

13. **Claims 7 and 37** are rejected under 35 U.S.C. 103(a) as being unpatentable over Jarvinen et al in view of Yasunaga et al, and further in view of Crouse et al (*U.S. Patent: 4,899,384*).

With respect to **Claims 7 and 37**, Jarvinen et al in view of Yasunaga teaches the speech decoding apparatus utilizing perceptual gain scaling, subframe based processing, and quantization processing, as applied to Claims 6, 21, 36, and 51. Jarvinen in view of Yasunaga does not specifically suggest utilizing a maximum absolute value of a speech parameter to derive a speech scaling factor, however Crouse teaches the use of such a value (*Col. 5, Lines 5-16*).

Jarvinen, Yasunaga, and Crouse are analogous art because they are from a similar field of endeavor in speech coding systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Jarvinen in view of Yasunaga with the maximum absolute value parameter taught by Crouse in order to implement a speech coded method having reduced peak information that is consistent with a desired speech output quality (*Crouse, Col. 4, Lines 1-11*).

14. **Claims 13-14, 17, 19, 43-44, 47, and 49** are rejected under 35 U.S.C. 103(a) as being unpatentable over Jarvinen et al in view of Yasunaga et al, and further in view of Swaminathan et al (*U.S. Patent: 5,751,903*).

With respect to **Claims 13, 17, 19, 43, 47, and 49**, Jarvinen in view of Yasunaga teaches the speech decoding apparatus utilizing perceptual gain scaling and quantization processing, as applied to Claims 12, 16, 18, 42, 46, and 48. Jarvinen in

view of Yasunaga does not teach the use of differential scalar quantization, however Swaminathan discloses the use of such a quantization during speech coding (*Col. 10, Lines 48-56*).

Jarvinen, Yasunaga, and Swaminathan are analogous art because they are from a similar field of endeavor in speech coding systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Jarvinen in view of Yasunaga with the differential scalar quantization taught by Swaminathan in order to implement a means for quantizing speech parameters that requires a reduced number of bits (*Swaminathan, Col. 8, Lines 65-98*).

With respect to **Claims 14 and 44**, Yasunaga further discloses the use of a feedback loop having a speech parameter quantizer (*Col. 30, Line 42- Col. 31, Line 9; and Fig. 16*), while Swaminathan discloses the use of differential scalar quantization as applied to Claims 13 and 33.

15. **Claims 28-30 and 58-60** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yajima et al in view of Navaro et al (*U.S. Patent: 6,108,560*).

With respect to **Claims 28 and 58**, Yajima discloses the system for adapting speech gain parameter as applied to Claim 25. Yajima does not teach system implementation in TFO GSM environment, however Navaro teaches speech coding implemented in such an environment (*Col. 6, Lines 11-29*).

Yajima and Navaro are analogous art because they are from a similar field of endeavor in speech coding systems. Thus, it would have been obvious to a person of

ordinary skill in the art, at the time of invention, to modify the teachings of Yajima with the speech coding implementation in a GSM system as taught by Navaro in order to achieve high quality speech coding in a mobile environment (*Navaro, Col. 1, Line 11-Col. 2, Line 11*).

With respect to **Claims 29-30 and 59-60**, Yajima teaches adjusting gain for encoded speech parameters as applied to Claim 25, while Navaro further recites the TFO frame format comprising 2 LSBs and 6 MSBs of PCM speech data (*Col. 6, Lines 11-29*).

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Kapanen (*U.S. Patent: 5,835,889*)- teaches a method for calculating a gain correction factor.

Gao et al (*U.S. Patent: 6,104,992*)- teaches a system that adjusts a gain factor to optimize gain contributions.

Kato et al (*U.S. Patent: 6,266,632*)- teaches a means for correcting an encoded speech gain factor based on speech signal energy.

Mayer (*U.S. Patent: 6,556,844*)- teaches a transcoder capable of processing GSM speech data.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached at (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak
5/5/2006


DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600